

BASS: UTAH'S OTHER GAME FISH

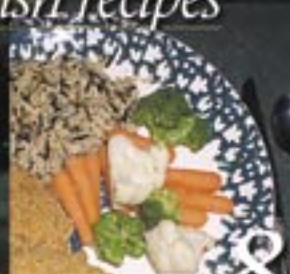
UTAH DIVISION OF WILDLIFE RESOURCES • SPRING 2005

fishing

SPECIAL ISSUE OF WILDLIFE REVIEW MAGAZINE



Fish recipes



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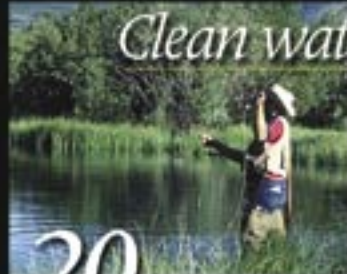
Lake Powell

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Rules

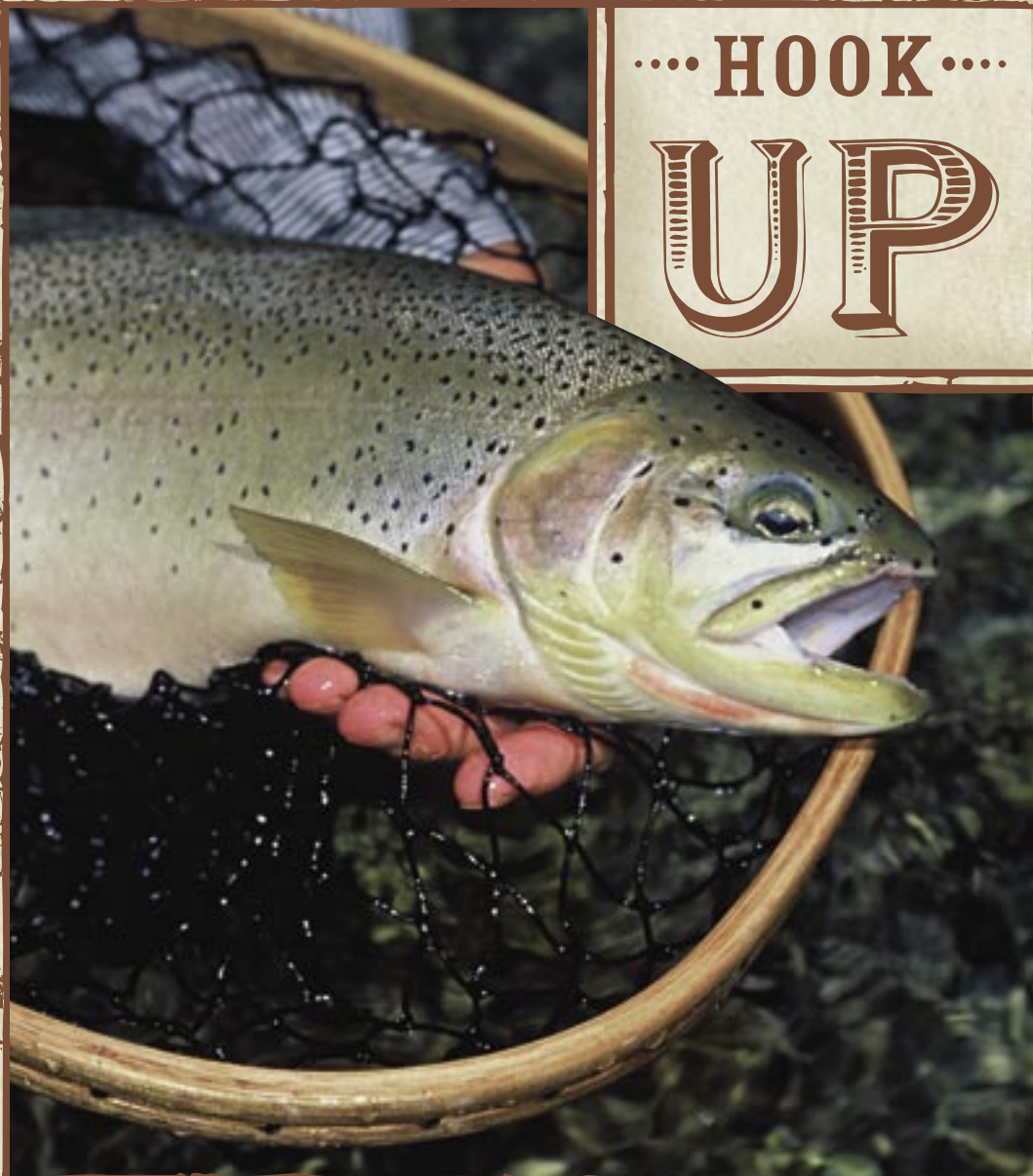
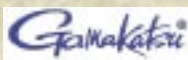
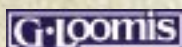
Clean water



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Wildlife Review

Utah Division of Wildlife Resources

Spring 2005

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“Today, you can fish most of Utah’s waters year-round, and there are a greater variety of fisheries across the state.”

DIRECTOR’S MESSAGE

THANK YOU for picking up this special fishing issue of the *Wildlife Review*.

Sportfish management and angler interests have changed since I started working for the Division of Wildlife Resources in 1975. Back then, the rainbow trout was king of Utah’s fisheries, and trout anglers were limited to fishing during the summer and fall.

Today, you can fish most of Utah’s waters year-round, and there are a greater variety of fisheries across the state. Rainbow trout are still the species most Utah anglers target, but many anglers also are becoming interested in other species. These include warmwater species such as tiger muskie, walleye, yellow perch, bluegill and black bass.

We’ve highlighted information about Utah’s warmwater fisheries in this issue and have included a map showing where warmwater fisheries are located in the state. Fishing for warmwater species can be very productive, and it’s something children can easily do and be successful.

In recent years, the Division has worked with communities across Utah to develop community fisheries that are accessible to youngsters, anglers with physical challenges and the elderly. Many communities are embracing fishing as a popular and positive recreational pursuit.

They’re working with the Division to develop community fisheries and provide programs to teach youngsters about fishing. These fisheries provide anglers a close-to-home fishing experience they’ve never had before.

Personnel at the Division’s fish hatcheries continue to work hard to produce the numbers and quality of trout anglers expect.

The division is also raising warmwater species such as smallmouth bass, wipers and tiger muskie. Catfish are also being brought into Utah for stocking in community fishing waters.

State hatcheries have experienced declining water flows, making it a greater challenge to produce the number of fish requested.

Hatchery personnel have done a remarkable job producing fish under these trying conditions. Even with the drought Utah has experienced, excellent fishing is still available in the state. In fact, at some waters fishing is reported to be better than ever.

I hope this issue of *Wildlife Review* will help you make the most of your 2005 Utah fishing experience. I encourage you to take advantage of the great fishing opportunities available in our state. 🐟



Miles Moretti
Acting UDWR Director

BY RAY LOKEN

CONSERVATION OFFICER, CENTRAL REGION

LEARN THE RULES

Fishing regulations

Limits and laws keep fisheries healthy

“GOOD AFTERNOON SIR, I’m a state wildlife officer. Could I please see your fishing license and any fish you have in your possession?”

I’d said these words hundreds of times and did so again as I checked an angler at Silver Lake in Big Cottonwood Canyon east of Salt Lake City.

The angler I was talking with produced his fishing license and excitedly held up a stringer holding six rainbow trout.

“The fishing’s been great,” he said.

“Did you catch these six fish?” I asked.

“Yes,” he responded.

I asked if he knew what the daily bag limit for trout was, and he responded weakly, “eight?”

As we talked, I learned that he hadn’t fished for several years. He remembered how much fun it was, though, so he purchased a license, dusted off his equipment and drove

up the canyon to fish. He hadn’t read the fishing proclamation and remembered that the limit was eight trout the last time he fished.

His excited mood was dampened

when I informed him he was two fish over his legal limit, and that I would have to issue him a citation and take two of his trout as evidence.

Utah’s four-trout limit

In January 2002, the Utah Wildlife Board set the state’s daily trout bag limit at four fish statewide. Trout are defined as all species of trout, salmon, grayling and trout hybrids. The four-trout limit is half of the eight-trout limit anglers had been used to for years.

Before presenting the four-trout recommendation to the Wildlife Board, UDWR biologists studied years of data collected from across Utah. They concluded that a reduction in the daily bag limit would have a minimal impact on the average angler. The data showed that most of Utah’s trout were being caught by a small percentage of anglers. By reducing the possession limit, more fish would remain in Utah’s waters, providing a better fishing opportunity for everyone.

What is a possession limit?

A concept that Utah anglers often misunderstand is what a possession limit means.

A possession limit is the total



Knowing the regulations will help ensure an enjoyable fishing trip.



PHOTOS BY BRENT SIETLER

The possession limit for trout is four fish per person. This includes trout in the field or at home in the freezer.

number of daily bag limits a person may have in their possession at any time, including both in the field and at home. For example, with upland

and daily bag limits are the same. This means that an angler may not possess more than four trout. For example, if an angler has four trout at home

incident from the fall of 2003 when an elderly couple from West Valley City made headlines for having 164 trout over their legal limit at home in

“ HIS EXCITED MOOD WAS DAMPENED WHEN I INFORMED HIM HE WAS TWO FISH OVER HIS LEGAL LIMIT... ”

game birds, it's not uncommon for the possession limit to be two daily bag limits. If the bag limit is two birds, then a hunter can possess four birds at one time.

For fish, however, the possession

in the freezer, he may not catch any more until at least one of those trout is eaten. Then he can only go out and catch one more, when he would have four trout in his possession again.

Many people may remember an

their freezer. The couple came under investigation when citizens alleged they were taking multiple daily bag limits. UDWR officers in plainclothes observed the couple and found the allegations were true.

This kind of gross over-limit is uncommon, but it wouldn't take too many similar instances to put a tremendous strain on local fisheries.

Illegal stocking threatens Utah's fisheries

A threat to Utah's fisheries that's even more significant is the illegal introduction of aquatic wildlife and plants into the state's waterways. Whether it's a child innocently releasing a bucketful of minnows or a self-serving angler transplanting his favorite game fish, the end result can be devastating to local wildlife.

To provide the best fishing possible, and to protect Utah's native species, UDWR biologists carefully study each waterway to determine whether new species should be introduced. Unfortunately, some Utahns have taken it upon themselves to decide which fish belong where, with disastrous results.

For example, as a part of the UDWR's Community Fisheries program, ponds in local communities along the Wasatch Front are regularly stocked with trout, channel catfish, largemouth bass and bluegill. These fisheries provide people a chance to fish without having to travel a long distance. In the last two years, exotic species including gold fish, koi, Oscars, loach, piranha, tinfoil barbs, green sunfish, black bullheads, painted turtles, red-eared sliders and bullfrogs have been illegally introduced into local ponds, threatening these fisheries.

In Mantua Reservoir in northern Utah, the introduction of Eurasian milfoil (an aquatic plant) has choked the reservoir, making it virtually impossible to operate motorboats. Gillnet surveys at Jordanelle Reservoir have revealed illegally stocked walleye. The long-term consequence of these introductions has yet to be seen, but with the variety of aggressive and prolific species involved, the outlook isn't good.

How you can help

There are three key things



Teach young children to obey fishing rules while having a good time.

anglers can do to keep Utah's fisheries healthy:

1. Don't release pet fish into these waters and don't let your children keep the "minnows" they catch on family camping trips. They often end up illegally introduced into local streams when the children tire of them and parents don't have the heart to kill the fish.

Anglers should be aware that it is illegal to transport live aquatic wildlife (including fish) from the water where they're caught. Transporting live aquatic wildlife, and taking more fish than the legal limit, are both offenses punishable by fines up to \$555. Illegally introducing live aquatic

wildlife into waters where they did not originate is punishable by fines up to \$1,850.

2. Carry a current Utah fishing proclamation and read through it to familiarize yourself with the rules. Remember that Utah has a four-trout possession limit.

3. Anglers who observe or know of others violating these rules should report them by calling the UDWR's Help Stop Poaching Hotline at 1-800-662-3337. UDWR conservation officers will respond to these calls and are aggressively enforcing Utah's fishing laws by patrolling waterways and staffing checkpoints to protect the future of Utah's fisheries. 🐟

BY PHIL DOUGLASS

NORTHERN REGION CONSERVATION OUTREACH COORDINATOR

COOKING

Recipes

Enjoying the tasty rewards of fishing

"This dish of meat is too good for any but anglers, or very honest men." — Izaak Walton

IZAAK WALTON, the father of modern angling, often wrote of the joys, virtues and rewards of fishing. One of the best rewards for sportsmen is a meal provided by the bounties of nature. Anglers, or "very honest men" (or women), as Walton called them, earned this reward by learning how to enjoy fishing and fishing spots without depleting the resource. Many waters and fisheries benefit when fish are harvested, but there are limits. Increasing numbers of anglers are adopting catch-and-release fishing, only keeping a few fish for dinner and letting the rest go.

But those fish that do make it home for dinner with you provide a delicious reward. Bruce Andersen, former chief of Information and Education for the Division of Wildlife Resources, often said, as he talked about bluegill and yellow perch, "There's a reason why they call 'em panfish!"

Like most anglers, Division of

Wildlife Resources employees have their own favorite ways to enjoy the great variety of fish in Utah, and we've compiled some of their favorite recipes here. The recipes focus on three different kinds of settings for cooking fish: home; backpacking; and car, boat or all-terrain vehicle (ATV) camping.

For more wildlife recipes, visit the Wildlife Discussions Forum at the UDWR's Web site (wildlife.utah.gov). Hunters and anglers regularly post their favorite recipes and tips to share with others.

Home

A spice rack, refrigerator, stove and all the comforts of home make more complex dishes possible.

Striped Bass, Garden Vegetable Chowder

Provided by Bruce Bonebrake, Habitat Manager, Southern Region

- 1 pound diced potatoes
- 1/3 cup chopped celery
- 1 large chopped onion
- 2 sliced carrots
- 1 small package cream cheese
- 8 ounces sour cream
- 1 quart half-and-half

- 1/3 pound bacon bits, fried & drained
- 2 cups fresh sliced mushrooms
- 1 can cream of mushroom soup
- 1 can cream of shrimp soup
- 2 pounds chunked fish fillets

Slowly heat the cans of soup and the half-and-half in a large (2-gallon) pot. Cut and add vegetables (except mushrooms). Make sure fish fillets are boneless.

Set fish chunks aside—if added too soon, they'll fall apart and make the chowder "mushy." Fry bacon bits and add to the pot. In the bacon pan, fry the mushrooms and add them to the pot. When vegetables are done, add fish, sour cream and cream cheese to the pot. If the chowder is too thick, it can be thinned with milk. Season liberally to taste with salt, pepper and basil, and season lightly with nutmeg. Great with rolls or French bread. Serves six.

Tomato, Herb and Olive Crusted Trout

A Wildlife Review staff favorite from the British Trout Association

- 4 ounces fresh breadcrumbs
- 1 tbsp chopped parsley
- 1 tbsp chopped thyme
- 2 plum tomatoes, finely chopped
- 2 oz black pitted olives, finely chopped
- 4 five-ounce trout fillets
- 2 tbsp olive oil

To serve:

- 1 lb new potatoes
- 8 oz sugar snap peas
- 1 oz butter, melted
- Sea salt and black pepper

To garnish:

- Thyme sprigs

Preheat the oven to 400° F.

Place the breadcrumbs in a bowl and stir in the herbs, tomatoes and olives. Season and mix well.

Arrange the fish fillets on two oiled baking sheets and spoon the crust mixture on top. Drizzle with oil and bake for 15 minutes.

Meanwhile, boil the new potatoes



An easy-to-prepare meal of freshly caught fish, rice and garden vegetables is healthy and tastes good too.

for 15 minutes and steam the sugar snap peas.

Serve with melted butter and a good sprinkling of black pepper.

Garnish with thyme and a drizzle of olive oil and some sea salt flakes. Serves four.

Cook's tip: Push the point of a knife into the center of the fish through the crust to check how well it is done. The fish should be opaque but not overcooked.

Backpacking

The backpacker's challenge is to prepare a hearty meal with items that can be carried in a backpack. Back-country meals must be lightweight and simple.

The "foil trout dinner" is a standard for backpackers, but adding a small container of mixed spices, such as

rosemary, basil and lemon pepper, can add savor and variety to foil dinners.

Poor Man's Lobster

*Provided by Paul Birdsey,
Aquatics Manager, Southeastern Region*

Bring one large saucepan of water to a steady, rolling boil. Place fish fillets in the boiling water and serve with lemon juice or melted butter. Cook's tip: Don't throw away the small pouches of lemon juice, ketchup and other condiments found in many restaurants—they're great for backpackers.

Car, boat or ATV camping

While limited space is still a consideration, car, boat or ATV campers can take more cooking equipment, such as a Dutch oven, with them to

prepare more elaborate dishes.

Trout, Wild Rice Dutch Oven Casserole

*Provided by RaLynne Takeda,
Hunter Education Specialist*

- 3 cups cooked wild rice
- 2 eggs, beaten
- 1 cup milk
- 3 cups baked, flaked trout
- 1 teaspoon salt
- 1 teaspoon lemon juice
- 1 tablespoon soy sauce

Bake and then flake trout. Beat the eggs thoroughly. Blend in the hot, cooked rice, trout and milk. Add salt, lemon juice and soy sauce. Mix thoroughly. Spoon into the Dutch oven and bake for 10–20 minutes at 350 degrees. 🐟

BY ANN EVANS

AQUATIC EDUCATION SPECIALIST

INFORMATION

Fishing resources

Knowing where to look is the key

IT'S A WONDERFUL spring day. You're ready to throw off the winter blahs, hit a great fishing spot and bring dinner home. But how do you decide where to go and what equipment to take? Fortunately, there are plenty of places to obtain current fishing information, no matter what time of year it is.

Fishing Proclamation

Picking up a copy of the latest Utah fishing proclamation is a good first step. Printed copies are available at any Division of Wildlife Resources office. Many sporting goods stores have them too. It's also available online at the UDWR Web site at wildlife.utah.gov/proclamations.

The proclamation will provide you with all of the rules and regulations you need to know to make your outing trouble free. These include which waters are open or

closed to fishing and the size limit and number of fish you can keep at each water. The proclamation also includes fish identification pictures and information on catch-and-release techniques.



UDWR Web Site

The Division's Web site (wildlife.utah.gov) has a variety of information to help you decide where to drop your line and what baits and lures to use. Some of the information you'll find includes:

- Weekly fishing reports:

Find out about fishing success at various waters and tips on how to be successful. The information in the reports is provided by anglers and UDWR personnel.

- Popular Utah fishing destinations:

Find out current information about the waters everyone is talking about.

- Community fishing waters:

Don't have time to drive a long distance? This section helps you find waters that are close to home.

- Blue Ribbon Fisheries information:

Find information on Utah's premier fishing spots.

- Physically challenged access sites:

If access is a concern, find spots that have good access for people with physical challenges.

- Rod-and-reel checkout sites:

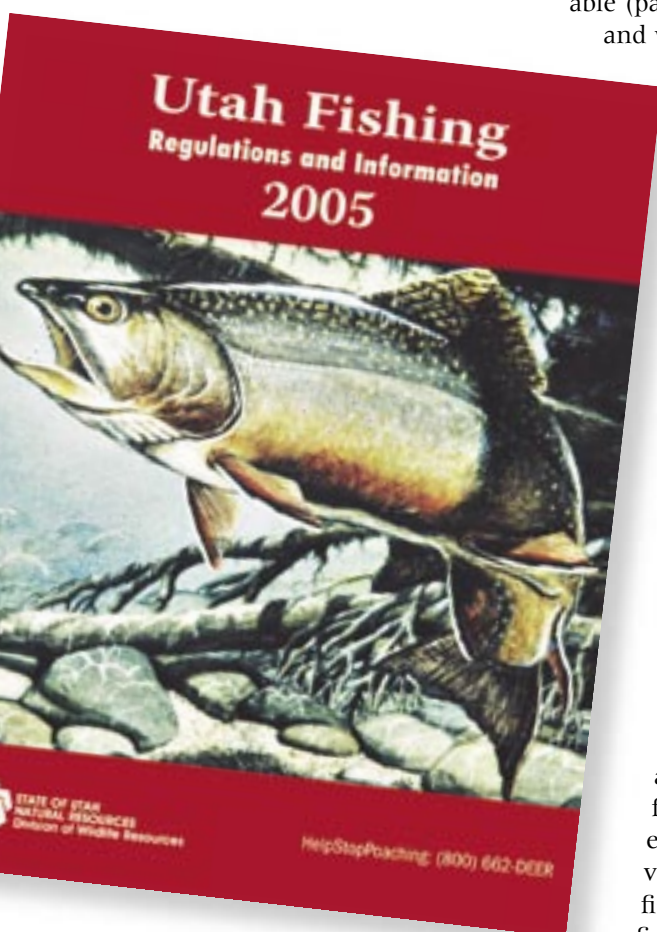
Has spring sprung before your equipment is ready, or you can't find everything you need but you're anxious to fish? Check out equipment from one of the UDWR's rod-and-reel checkout sites. Checkout is free and equipment can be kept for two weeks.

- Stocking information:

Find out when your favorite spot was last stocked and the number and size of fish placed there.

- Species identification:

Need help identifying one of your catches? Look it up on the Web.



able (panfish, trout, bass or catfish) and which waters have access for those with physical challenges. It also includes information about fishing equipment and which baits to use.

To request the map, or for any other printed information, call (801) 538-4769.

Other fishing sources on the Web

A variety of non-UDWR information is also available on the Web. Search using "Utah fishing information" as a keyword and you'll find a host of useful sites.

For example, FishBytes (*UtahOutdoors.com*) provides a weekly report of Utah fishing sites. Utah Fish Finder (*UtahFishFinder.com*) provides information on Utah's fishing hot spots, fly fishing, fish stocking, weather reports and even sunrise and sunset information. The

Utah Travel Council (*Utah.com*) also has a great site that provides information on guides and lodges. Fish West (*FishWest.net/utah*) has a comment board, photo gallery, articles, current fishing information and hatch charts that can help you enjoy great fly fishing.

State park offices

If you want up-to-the-minute information about reservoirs and lakes managed by the Utah

Division of Parks and Recreation, you can call the state park office at that location and get weather conditions, water temperature, boat launching and current fishing information. A list of state park telephone numbers is available at stateparks.utah.gov or by calling (801) 538-7220.

Local bait and tackle shops

Bait and tackle shops are another great information source. The local shops often have the latest information about regional fishing hot spots and which baits are working best. Employees at the shops can also help you make good equipment choices for the type of fishing you'd like to do. You can even swap fish stories with the locals!

With all of these information sources, there aren't many excuses not to get out and enjoy one of Utah's prime recreational experiences. Fishing is a great way to enjoy the outdoors, bond with family members and friends and make memories that will last a lifetime. 🐟



Interactive sites:

Exchange information and stories with other anglers around the state. You can participate in general fishing discussions, post questions for other anglers to answer, tell everyone about your latest fishing trip and post photos of your latest catch.

• Other information: Information on whirling disease, angler ethics, catch-and-release techniques, aquatic nuisance species and a variety of other fishing topics is also available.

Printed information

If Web access is a problem, the UDWR can mail copies of most of the information available on the Web. The UDWR also has a statewide fishing map entitled "Utah's Lakes and Streams." This map shows all of the major waters in Utah, what type of fish are avail-

Bass fishing really gets started when water temperatures get into the 40s. That means that catches like this smallmouth bass are possible almost all year long, from early spring until well into the fall.



BY RANDY BRUDNICKI

BASS

Utah's other game fish

Tips for bass fishing through the year

BECAUSE UTAH is a leader in rearing trout and providing naturally reproducing trout fisheries, the state's bass fishing is often overlooked. But the state offers some great bass fishing, and a growing number of Utah anglers are turning to bass, which is a popular warmwater fish in other parts of the country.

To the uninitiated, bass fishing can be a confusing world of terms, lure names and techniques. It takes many years of fishing to experience them all. There are some basics, however, that can help you get started enjoying Utah's other great fishery.

Utah's bass species

Smallmouth and largemouth bass are the two black bass species found in Utah. These bass are actually related to sunfish, such as bluegills and crappie.

Smallmouth are Utah's most numerous black bass species. They can be found in waters all over the state. Some of Utah's best smallmouth

waters include Jordanelle, Deer Creek, Flaming Gorge, Starvation, Lake Powell and Pineview reservoirs. In addition, several lesser-known smallmouth bass waters, including Midview and Bottlehole (both Ute tribal waters in the Uinta Basin) provide excellent fishing.

Many of these same waters also are home to largemouth bass. Lake Powell, Jordanelle and Deer Creek produce largemouth, as do Utah Lake, Hyrum, Sand Hollow, Pelican Lake and Quail Creek. Many of Utah's community fishing waters (waters within urban communities) also have largemouth bass. That's an impressive array of bass fishing opportunities for a trout state!

Spring and early summer

Bass can be taken through the ice or shortly after ice-off, but that's extremely rare. Bass fishing really gets started when the water is just above 40° F. Depending on the body of water, you'll encounter water in the 40-degree range anytime between

February and late April. Lake Powell, for example, rarely drops below 45° F in winter, while many higher-elevation reservoirs freeze up. After the ice comes off, it takes several weeks for the water in these higher-elevation waters to reach 40° F.

In the cool water of spring, bass are sluggish, so fish at a slow pace. Try using a **suspending jerk bait**. Tie the lure on a 10-pound line and make a long cast. Quickly pull, or jerk, on the lure a couple of times to get it to dive to about five feet and then twitch it. Let it sit for a while and twitch it again. Repeat this procedure as you retrieve the lure all the way back to you. Most of the hits come when the lure is not moving, so the more the lure sits, the more likely a bass will strike it.



Jerk bait

A jerk bait is a long, minnow-shaped lure that dives several feet when retrieved. Diving depths vary depending on the model, but the average is three to eight feet. Some great suspending jerk baits include Husky Jerk, Smithwick Rogue and Bomber Long A. A new suspending jerk bait called a Rapala X-Rap also looks very promising.

When the water temperature reaches about 50° F, fish with a jig n' pig on the bottom around rocks. Black, brown, blue and purple are good colors to start with or try various combinations of those colors, such as brown and purple or black and blue.

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UTAH Bass Fishing





Largemouth Bass

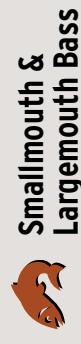
The head of this fish is large and long. The mouth is large and terminal with the upper jaw reaching past the center of the eye in adults. The upper parts of the body and head are greenish with a silvery or brassy luster. The belly is white to yellow. There is an irregular dark stripe along the sides. The eyes are brown.



Smallmouth Bass

The snout is long and bluntly pointed. The lower jaw slightly longer than the upper jaw. Smallmouth bass vary in color with habitat, but are normally dark olive to brown on the back with the sides lighter and yellowish and the belly yellowish. There are 8 to 15 (average of 9) dark vertical bars on the sides which distinguishes them from the largemouth bass. Anterior dorsal fin has 10 spines, and is strongly joined to the soft dorsal. The anal fin has three spines.

LEGEND



Smallmouth & Largemouth Bass



Smallmouth Bass only



Largemouth Bass only



STATE OF UTAH
NATURAL RESOURCES
Division of Wildlife Resources

**Jig bait**

Continued from page 13

Jig baits are live rubber or silicone-skirted lead weights varying in weight from one-quarter to one-half ounce. Occasionally, jigs weighing up to one ounce may work. The jig is tipped with a piece of cured pork rind or a plastic crawdad imitation.

The closer the water temperature gets to 60° F, the more aggressive the bass become. You can fish faster and add more lures to your arsenal. Crank baits and spinner baits are good when the water is warming after several days of stable weather.

Spinner baits are especially effective around cover that attracts bass, such as brush or weeds. The spinner bait is fairly "weedless" so you can retrieve it through the cover without snagging it.

In open water, **crank baits**

**Spinner baits****Crank baits****Lipless crank bait**

retrieved very slowly often elicit strikes from bass.

Lipless crank baits don't have a diving bill like other crank baits and they usually contain rattles. They're sometimes called rattletraps, named after an original crank bait brand, Bill Lewis Rat-L-Trap. Lipless crank baits are especially effective for smallmouth bass.

If a cold front moves in, you can still find success by switching lures. Small plastic baits, such as tube lures (gitzits), plastic worms or flukes, are good lures to use after a cold front.

Soft plastic worms can be fished on the bottom, or you can cast and retrieve them. When retrieving soft plastic worms, swim the lure back in slowly. Some of the most effective methods are Carolina rigging or drop shooting.

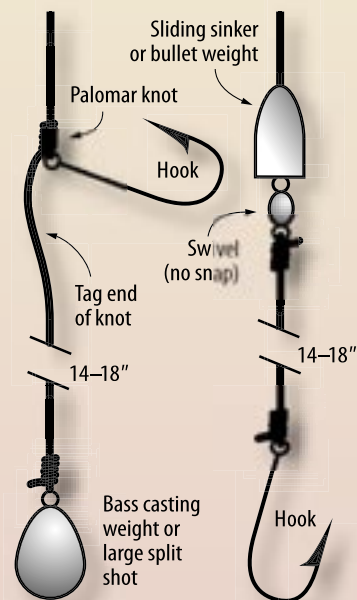
Carolina rigs have a sliding sinker on the main line; a swivel stops the weight from sliding all the way to the bait. Tie a one- to three-foot leader to the other end of the swivel, and then attach the lure. **Drop shots** are just the opposite: A plastic lure is tied one to three feet above the weight.

Bass spawn when the water tem-

Bass riggings

Drop shot

Carolina rig



perature hits about 62° F. Spawning activity may start when the water is cooler (in the mid-50s) but the peak activity is 62–64° F. When bass spawn, they're not interested in eating much, but you can still entice them to bite because they're aggressive in protecting their nesting sites.

After the spawn, bass fishing can be difficult for several weeks. The bass need to recuperate from spawning and typically move to deeper water or suspend themselves away from the bank. You may still be able to catch bass after the spawn by casting deep-diving or lipless crank baits in deep water close to spawning areas.

Summer

As summer progresses, some bass are in deep water and others move to heavy cover. Both conditions may be difficult to catch fish in, but it's not impossible. Concentrate on fishing in the early morning or in the evening before dark or, on hot summer nights, try fishing late at night.

During daylight hours, Carolina rigs and drop shot rigs can be very effective. Use small plastic lures fished deep near points, ledges and drop offs.

Peak bass activity happens when the water temperature is around 74° F. This is a great time to fish **top-water bait** such as poppers, Ricos, buzz baits, zara spooks or, if there are weeds or brush, Snag Proof Frogs. On cloudy days, you can catch bass on top-water baits almost all day.

Top-water baits splash, gurgle or pop when retrieved, attracting bass to the surface. Popular top-water baits include chuggers (Pop-R, Chug Bug), spitters (Rico), prop baits (Tiny Torpedo, Devils Horse, Wood Chopper), buzz baits, weedless frogs (Sumo Frog, Snag Proof, Scum Frog) and various stick baits, such as floaters (Rapala) or the Zara Spook.

Fall

As the weather and water cool, bass pack on weight in anticipation for winter and feed heavily for several weeks before heading to deep-water winter haunts. Top-water, crank baits, plastics and spinner baits all can be effective.

Equipment

In Utah, clear-water bass fishing usually means using six- or eight-pound line. In heavy-cover situations, you need 12- to 20-pound line. The heavy line will get the bass out of the cover without the fish breaking off. Also, fast-moving, top-water lures, such as buzz baits, can only be fished effectively on heavy line.

As you might guess when using heavy line, a normal "trout rod" isn't going to work well. Many bass anglers use six- to eight-foot, medium-heavy or heavy rods because they need the backbone to move bass away from the cover. Also, bass have a hard mouth, so you have to set the hook hard when using big lures.

Bass can be aggressive one day and totally turned off the next. That's why there are so many lures and techniques to choose from. Most of these lures have been refined and tested on pro bass tournament circuits where thousands of dollars are on the line every week. Thanks to the pros, recreational anglers have the best



PHOTO BY LOREN BROOKS

With practice and the right equipment, you'll be landing bass like a pro.

tackle ever and new techniques and lures are being invented all the time.

Bass clubs

If you want to learn more about bass fishing in Utah, consider joining a local bass club. Club members meet monthly to share fishing tips and often fish together in small tourna-


ments. Most of the bass club members in Utah own boats. Getting involved in a club is a great way to fish with people who know the local lakes. They can show you the best hot spots and teach you how to use different lures and techniques. For more information, point your Web browser to UtahBassFederation.org. 🐟

Other Utah *fishing opportunities*

Other popular warmwater species in Utah include panfish such as crappie and bluegill. Walleye is a great coolwater species, as are white bass, striped bass and wipers, which are a hybrid between white bass and striped bass.

Some of the tactics for wipers and striped bass are similar to those used for largemouth bass. Panfish and white bass, on the other hand, usually are caught on tiny lures, flies or live bait. Many panfish anglers in Utah only fish when the fish are spawning in the spring.

Tiger muskie is a different experience, and a treat for anglers in the West. Utah has some great tiger muskie opportunities, with Pineview Reservoir being one of the best places to try for this coolwater fish. When fishing for muskies, big baits and big fish rule. It's specialized fishing for big, mean fish that are hard to catch, but when you land a four-foot-long fish, it's worth the effort!

A man wearing a light-colored fedora-style hat and dark sunglasses is holding a smallmouth bass. He is wearing a grey button-down shirt and is on a boat. The background shows a rocky shoreline and water.

Spring is a great time to visit Lake Powell—the summer crowds haven't arrived, the temperatures are ideal and the fishing couldn't be better. Here, one of the authors, Lynn Chamberlain, shows off a nice smallmouth bass he caught on a recent fishing trip to the lake.

BY WAYNE GUSTAVESON
SOUTHERN REGION WILDLIFE BIOLOGIST

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SPRING FISHING

Lake Powell

It doesn't get much better than this

IN THE PAST DECADE, one of the allures of fishing at Lake Powell has been the vast number of fish you can catch on each trip. And with a small bass behind every rock, it's been a great place for beginning anglers to learn to fish.

Well, there's more good news in 2005. The fantastic fishing of the past few years is back and might be even better! The smallmouth and largemouth bass are larger, and the lake's stripers are numerous and BIG.

Here's a species-by-species run down of what to expect, along with tips and techniques to help you find success:

Striped bass

Threadfin shad are the main forage base for striped bass in the lake, and stripers have taken advantage of three years of high shad abundance to grow to sizes not seen since the early 1980s. Stripers over five pounds are common and 10-pound

fish are seen occasionally. Prospects for catching fat striped bass over five pounds this spring are bright, especially in the lower reservoir accessed out of Wahweap or Antelope Point. The best spring fishing will be found in the backs of canyons, from Padre Bay to Rock Creek.

In the upper reservoir, stripers will be a healthy three to six pounds. Start fishing in Bullfrog Bay and Halls Creek. To find other spring hot spots travel downstream to Slick Rock and Rincon, or upstream to Good Hope Bay.

The challenge is that even though striper numbers are high, it may still be hard to catch them with traditional bait-fishing techniques. Shad numbers will be high and the stripers fat. That means anglers fishing with anchovies in early spring will not catch the number of stripers they have in the past. The fish will be very picky about what they eat. Fat stripers only eat shad, not cut bait.

For best results, anglers should use artificial lures that resemble vulnerable shad. Trolling or casting fast-moving shad lures, or vertically jigging spoons, will entice even the most satiated stripers.

Two of the best shad-imitating lures are shad raps and rattletails. Shad raps have a lip on them that causes them to dive as you retrieve them back to you. When pulled through the water, shad raps dive eight to 12 feet deep and then float back towards the surface when you release pressure on your fishing line. Rattletail lures don't have a lip on



PHOTO BY LYNN CHAMBERLAIN

Southern Region Supervisor, Doug Messerly, shows off a fine catch.

them. These lures sink to the bottom and then wobble as you retrieve them back. This wobbling motion often elicits strikes from waiting stripers.

Use the largest lures available (three to five inches) because stripers have grown to a size where they prefer larger food items. Both shad and rattletrap lure types can be cast or trolled with good results. Stripers will be close to shad in the spring. That puts them in the back of most

Smallmouth bass

Like stripers, smallmouth bass at Lake Powell have enjoyed the shad forage boom and steady growth. Smallmouth over two pounds were common in 2004. In 2005, these fat, mature adult bass will be closer to three pounds.

As is always the case, the highlight of spring fishing at Lake Powell coincides with the spawning of smallmouth bass. As the water surface temperature hits 60 to 64° F in

for about 10 days, then they leave the young and spawn for a second or third time.

When they're the most aggressive, bass will strike any lure put near their nest. As their aggression wanes, they may push a lure around with their snout or lift it with their tail and remove it from their nest, discarding it a safe distance away.

The best lures for fishing spawning bass are weightless plastic jerk baits, such as a Yamamoto Senko or Zoom Fluke impaled on a 1/0 worm hook. Cast the bait near the nest, and let it settle slowly and seductively onto the rocks. Male bass will hit this plastic presentation better than perhaps any other lure. Crank baits also work, but they're only near the nest for a short time. Plastic grubs sink quickly and are often dragged off the nest by the bass's tail. Regardless of what lure is used, watching a three-pound bass play with your lure in plain sight is worth the trip.

“THE SMALLMOUTH AND LARGEMOUTH BASS ARE LARGER, AND THE LAKE'S STRIPERS ARE NUMEROUS AND BIG.”

canyons, where the water is 25 to 50 feet deep. Since stripers are in a school, it may be best to troll until a fish is caught, then cast in the general area to find the fish's schoolmates. Trolling at three to four miles per hour is the ideal speed to present shad lures to fast-swimming stripers.

The best way to find spring stripers is to locate them on a fish finder. Schools tend to move away from boats, but a quick cast (as soon as you see them on your graph) may reward you with a large fish. When fishing for stripers, always keep a rod ready so you can react instantly if a fish strikes. If you see many shad schools on your graph but you don't know whether stripers are in the area, try trolling in the area to confirm whether stripers are there.

Striper fishing will warm with the water in mid April and then peak in May as stripers begin their spawning migration. Expect to see a few trophy stripers, larger than 20 pounds, caught during the spawn in May.

April, bass will move onto nests in record numbers. The thousands of rocky ridges and flats, comprising the entire length of Lake Powell's thousand miles of shoreline, will be filled with bass nests.

Lower water levels, caused by the drought, have exposed more sand flats at the lake. Steep cliffs tower far above the water, but at the base are boulder-littered sand flats suitable for spawning. With lots of sand showing, it's easy to pick out the rock structures bass frequent when spawning.

In April, target rocky flats for perhaps the best bass fishing experienced since the lake began filling in the 1960s. You can actually see spawning nests in Powell's clear water. Bass spawn on shallow rocks, often only one to two feet deep. Male bass guarding nests are fearless and will not leave the general vicinity of the nest. Peak aggression is observed when new eggs are one to two days old. With each passing day, the bass's aggression wanes. Bass stay with eggs and young bass fry

Largemouth bass

Largemouth bass are not as abundant at Lake Powell as smallmouth bass, but they did survive in good numbers in 2004. More flat, sandy coves made more aquatic weeds available for bass cover, which greatly enhanced largemouth survival.

Anglers can expect to catch more largemouth in 2005 than they did in 2004. Largemouth grow more quickly than smallmouth, so one- to two-pound largemouth will be available in spring 2005. Expect the bass ratio to be seven smallmouth to one largemouth.

The same baits used for smallmouth work on largemouth. The places you'll find them are a little different, however. You'll find largemouth around brush most of the time, while smallmouth will be near rocky structures. You'll usually find largemouth nests on shallow rock formations at the base of bushes, trees or submerged tumbleweeds.

In future years, expect to see the population of largemouth bass

increase dramatically as the lake rises and covers the tamarisk, willows and brush that's now growing on shore.

Walleye

Like bass species, walleye always do better after a good shad year. Walleye will become catchable from mid-April through June. These fish are very sensitive to light and are caught best in subdued light. For best results, fish for them in the early morning and late evening.

Since walleye are scattered, cover lots of water by trolling a Wally Diver lure (banana lure type) across rocky points. The lure runs about 10 to 12 feet deep, so make sure the lure bumps bottom occasionally on each rocky point as the boat swings by. The best trolling speed is two to three miles per hour. Trolling mudlines caused by wind and wave action in April and May is a time-tested technique for taking walleye during daylight hours at Lake Powell.

For the past two years, the catch of walleye from Bullfrog upstream has greatly exceeded the catch downstream.

Catfish

Catfish are in high numbers and

will provide lots of action in the summer months (springtime is a bit cool for them). They start to bite well in May and could be the fish caught most often at Lake Powell in June.

The best technique is to use a scrap of soft food, such as a chunk of hot dog or chicken liver, on a bait hook with no extra weight. Catfish are notorious for grabbing and dropping bait when they feel the weight's resistance. The weightless presentation does not alarm the catfish. Just watch for a quick jerk on your line to know when a catfish is near. Most catfish are caught in water that's less than 10 feet deep off sandy beaches just big enough to park a boat.

Because catfish numbers peak near inflowing water, the Colorado, San Juan and Escalante river infows may have the highest concentration of catfish.

Bluegill and green sunfish

Bluegill and green sunfish are two fish species that are often overlooked at Lake Powell. These flat fish (which are round, like a plate) are often caught while fishing brush for crappie in the warming water of April and May. They make excellent table fare and are a real kick to

catch—especially for young anglers.

For best results, use a tiny hook (size 10 to 12) with a piece of live worm. Look for sunfish to use the shade of your boat for a secure spot. Sunfish will come to your boat when cover is sparse, as it is in most locations on Lake Powell. Sunfish are abundant in Good Hope Bay in upper Lake Powell, and in the back of many canyons where there is plenty of brush.

Crappie

Crappie are possibly the only negative news about spring fishing at Lake Powell in 2005. There hasn't been enough brush present during the post-spawn period to allow good survival of young fish.

Crappie fishing will be very spotty in 2005. They will not rebound sufficiently until the drought is broken and the reservoir rises for two to three years in a row. When they do come back, you can expect to see crappie fishing as good as it gets.

With so many optimistic reports for the individual species, it looks like 2005 will be a great year to fish at Lake Powell. Expect to catch bigger fish than ever. This will be a year that will be remembered for decades. Don't miss it. 🐟



PHOTO BY LYNN CHAMBERLAIN

There are few better ways to end a day than watching the sunset at Lake Powell.

BY PAUL DREMANN

UTAH COUNCIL OF TROUT UNLIMITED

BY DON DUFF

TROUT UNLIMITED CONSULTANT

VOLUNTEERS

Trout Unlimited

Helping improve Utah's fisheries

SINCE 1959, Trout Unlimited (TU) has been working to improve trout fisheries across Utah. Over the years, Utah TU volunteers have given many hours of their time to help UDWR with fishery conservation activities, including assisting with habitat and fisheries studies, developing educational and kids' fishing programs, improving stream habitats and restoring native trout. These projects not only improve trout fisheries, but they also improve stream habitats for the benefit of all wildlife. And healthy wildlife benefits all Utahns, whether or not they fish.

The following is an overview of some of TU's most recent projects in northern Utah, which reflect TU's work across the state.

Trout in a fridge: TU has embarked on a unique project with state and federal agencies to restore native cutthroat populations using old refrigerators and Coleman coolers as streamside incubators for hatching

develop and maintain a variety of fisheries. TU, in cooperation with the Goshute Tribe, UDWR, the U.S. Forest Service (USFS), the U.S. Fish and Wildlife Service, the Natural Resources Conservation Service and the Deep Creek Mountain Ranch, used fridges to develop a Bonneville cutthroat fishery in several Goshute tribal waters. The fridges have also been used to help Bonneville cutthroats in Parleys Creek, Little Dell Creek and several Deep Creek Range streams.

Thanks to the fridges, Bear Lake and Colorado River cutthroats have also been hatched and placed in a variety of streams. And trout aren't the only fish that can be hatched in streamside fridges. TU and UDWR have also worked together to use fridges to hatch kokanee salmon eggs.

Building bridges: TU joined with ranchers, government agencies and other interested groups to develop a coordinated program to improve grazing practices, wildlife populations and riparian areas in Rich County. TU hopes that the combined effort of this diverse group will help restore degraded fisheries across the county. This unique partnership is gaining

eggs. These old fridges are an innovative tool for replenishing trout populations for recreational fishing, as well as jump-starting native trout restoration.

The fridges have been used to



Trout Unlimited volunteers work side by side with UDWR employees.

recognition from the U.S. Department of the Interior and across Utah.

Fencing for the future: Recently, the Cache Valley's Spawn Creek—an important Bonneville cutthroat spawning and raising stream—has experienced a decline in fish numbers and an increase in the prevalence of whirling disease. In 2004, the Cache Anglers chapter of TU, the USFS, UDWR and Utah State University, proposed fencing a 1.5-mile reach of Spawn Creek. The partners hope that the fences will keep the stream banks healthy, helping reduce the water temperature, improve sediment conditions, promote fish growth and survival, and reduce the prevalence and impacts of whirling disease.

Spreading the word: In coordination with fish pathologists from UDWR, TU has provided a \$10,000 educational grant to educate anglers about the presence and dangers of whirling disease in Utah.

With the funds, informational brochures were distributed in sporting goods stores and UDWR and USFS offices. TU members, Boy Scouts and Dedicated Hunters placed informational signs at strategic spots along contaminated and at-risk streams. The signs alert anglers to the parasite and suggest simple “do’s and don’ts” to help prevent spreading the disease. UDWR biologists believe this education campaign has helped limit the spread of whirling disease in Utah.

Free to flow: For many years, a dam and other impediments have kept fish from moving freely along American Fork Creek. In February 2003, TU, PacifiCorp and several state and federal agencies signed an agreement to decommission the American Fork Hydroelectric Project in American Fork Canyon. As a part of the agreement, PacifiCorp will remove the diversion dam and other impediments, restore the stream channel to a more natural condition, donate its water right to UDWR for instream flows, implement safety measures and

improve visitor facilities.

Minding the mines: Abandoned mines and their associated waste piles have degraded water quality in the North Fork of American Fork Creek. At one time, the stream failed to meet state water quality standards and fish tissue samples showed elevated levels



Heavy equipment is often needed to help improve Utah streams.

of lead, zinc, arsenic and other heavy metals. TU has initiated a partnership with Snowbird Ski Resort and state and federal agencies to address these threats to fisheries and human health.

Salt Lake's streams: While nature trails through natural areas are enjoyable for people, poorly maintained trails can pose serious problems for wildlife. An old trail in Affleck Park, for example, is cutting into a hillside and sloughing into Little Dell Creek, creating a sediment problem. TU is working with Salt Lake City to address this threat by creating a new loop trail that will connect to the Pioneer Trail. TU also is continuing to work with Salt Lake City to restore streamside habitat along City Creek.

A family affair: Recently, a proposal by Riverdale City to develop a community trail system led to a possible conflict with the Parson family, which owns private property along the Weber River. The Weber Basin Anglers TU chapter worked with the Parson family to determine how to best meet the needs of the pub-

lic without interfering with private property rights. They discovered that the family could receive a significant tax advantage by donating the land to TU. Once TU owned the land, TU transferred ownership to UDWR, with TU retaining certain rights on the property.

Together, UDWR and TU are working to restore this 1.5-mile reach of the Weber River to its natural condition.

From erecting fences to removing dams, TU is working on a wide variety of projects across the state that benefit fisheries and wildlife. Thanks to the work of TU volunteers, Utah's trout fisheries are healthy and thriving, and getting better every day. 🐟

BY BILL BRADWISCH
AQUATIC HABITAT COORDINATOR

AND JOHN FAIRCHILD
HABITAT CONSERVATION COORDINATOR

HABITAT

Clean water

There's more to it than meets the eye

WATER QUANTITY and quality issues have taken center stage during Utah's six-year drought. Drive by any reservoir, and it's obvious that the drought has taken its toll on the state's water supply. But it's not as easy to see the impact the drought has had on water quality.

What is water quality?

Most people think of water quality in terms of clean water or dirty water. They are partly correct. Water that looks "dirty" is often filled with sediments, or soil and other residues from the land. Water can also look murky if it contains high levels of nutrients such as phosphorous or nitrogen. Like fertilizers, these nutrients help tiny aquatic plants such as algae grow, making the water appear green and murky.

Some pollutants, however, can't be seen. Metals such as zinc, lead or mercury can make water unhealthy for people and wildlife, but they can only be detected by chemical tests.

The amount of dissolved oxygen in water is another important test of water quality that can't be performed with the eye. Many aquatic animals depend on oxygen, which dissolves from the air into the water, to breathe.

Water temperature is another important indicator of water quality. In general, the warmer the water is, the lower its quality. That's because cold water holds more dissolved oxygen than warm water does.

The Utah Department of Environmental Quality establishes water quality standards across the state based on the uses the waters serve. Water that is used for drinking must meet the highest standard. Water that is used for irrigation is managed at a lower standard, but if that water also supports a fishery, the standards must be high enough to keep fish healthy.

Cold and warmwater fish

Water quality is a critical factor in determining the types of fish that live in an aquatic habitat. In fact, it's more important than a stream or lake's shape, depth or even the vegetation it supports.

In general, freshwater fish species are classified as *coldwater* or *warmwater* based on their adaptations to different types of water quality. In Utah, examples of coldwater fish are the native and introduced trout species, mountain whitefish, kokanee salmon and Bonneville cisco. These fish need cold, clean water during all



Healthy fisheries depend on clean water.

phases of their life cycle, primarily to meet their dissolved oxygen requirements. These fishes' gills can't absorb oxygen at low concentrations, so they depend on cold, oxygen-rich water. As water temperatures increase above 63° F, coldwater fish struggle to survive.

However, warmwater fish, such as channel catfish, bluegill, crappie, walleye, yellow perch and small-mouth bass, can survive in water

Mississippi River where nutrients carried by the river cause algae blooms that deplete the water of oxygen. At more than 7,000 square miles, this dead zone is nearly the size of the state of New Jersey.

Problems at the source

Another important factor determining water quality is the health of the watershed. Healthy watersheds trap, store and slowly release water

plains. As the scouring has continued, the water has become completely contained within stream channels, which now must absorb the entire force of the flow. The rich riparian habitats—the habitats that border rivers and streams—that were once a part of the floodplains are now greatly diminished or they no longer exist. In fact, more than 4,000 miles of riparian corridors that support fisheries in Utah are degraded.

“UDWR, ALONG WITH ITS MANY PARTNERS IN THIS EFFORT, RECOGNIZES THAT HEALTHY WATERSHEDS AND HEALTHY WILDLIFE GO HAND IN HAND...”

with lower oxygen levels and higher water temperatures (65° to 75° F).

Effects of drought on water quality

Water quality standards are more difficult to maintain during drought periods. As water levels decrease, water temperatures and concentrations of pollutants increase. Changes in water temperature make coldwater fish most vulnerable, but all types of fish are vulnerable as pollutants, including nutrients, become concentrated.

As water levels fall and temperatures and nutrient levels rise, algae blooms become a threat. Even though algae produce oxygen during the day, at night these tiny plants use oxygen. And when the plants die and decompose, as they do in large numbers when nutrients are abundant, the bacteria that break them down rob the water of oxygen. When oxygen levels fall below the threshold fish require, fish kills are the unfortunate result.

Utah isn't the only area to struggle with excessive nutrients in its waters. In fact, each summer in the Gulf of Mexico a giant “dead zone” appears near the mouth of the Mis-

issippi River where nutrients carried by the river cause algae blooms that deplete the water of oxygen. At more than 7,000 square miles, this dead zone is nearly the size of the state of New Jersey.

Unfortunately, many of Utah's watersheds lack sufficient plant cover to trap water efficiently, and that has led to serious problems. Water that doesn't get absorbed moves over the surface as “runoff.” Excessive runoff causes soil erosion, which has led to the formation of gullies. Over time, a network of gullies has developed in Utah, forming a system of mini-canal that divert water quickly off the mountains and into the streams.

Historically, floodplains absorbed excess water during periods when water flows were high, minimizing damage to stream channels. Today, however, the high flows coming out of poor-condition watersheds are higher than those that shaped streams prior to European settlement. Consequently, many of Utah's streams have experienced severe down-cutting to a level well below their former flood-

The consequences have been severe for stream fisheries and riparian wildlife. Highly degraded streams lack the habitat required to support healthy fisheries. Sediments are covering the gravel areas that provide critical habitat for insects and spawning fish. Since sediment-laden streams retain more heat than clear-running streams, excessive erosion can raise water temperatures. In addition, temperature extremes are common where streams run wide and shallow over featureless terrain and where overhanging shade trees are gone.

The Division of Wildlife Resources is working on a variety of projects across the state to improve watersheds and water quality in Utah's streams, lakes and reservoirs. From returning vegetation to watersheds and streambanks to redirecting streams to their natural flows, the Division's projects are far-reaching. UDWR, along with its many partners in this effort, recognizes that healthy watersheds and healthy wildlife go hand in hand, and that today's investments in our watersheds will pay dividends to future Utahns. 🌱



UTAH'S WILD NOTEBOOK

BY DIANA VOS

PROJECT WILD COORDINATOR

WHEN FISH BECOME

Fish food

What does a fish catch for its supper?

WHEN YOU FIRST ponder this topic, you may think the answer is obvious—big fish gulp down smaller fish, which feast upon smaller fish that in turn eat even tinier fish and other small creatures. As you delve deeper into the subject, though, you'll learn it's more complicated than that. What different fish eat is influenced by a variety of factors.

Getting a mouthful

One factor that plays a role is the structure and position of a fish's mouth. The orientation of its mouth is an indication not only of what it eats but where it feeds. A fish with a mouth at the end of its snout (a terminal mouth) can feed throughout the water. Fish with an upper jaw protruding past their lower jaw (subterminal mouths) usually feed on prey they see below them. Fish with their mouths angled upward (superior position) feed on prey they see above them, such as aquatic insects on the surface of the water. Those with

mouths opening downward (inferior position) are typically bottom feeders.

Fish that have large mouths filled with sharp teeth are predatory, which means they eat other living fish. Bass are an example of a large-mouthed fish that can engulf its prey. Many

fish-eating fish have a hard-rimmed mouth with patches of small teeth on the roof of the mouth, or they have large teeth in the throat (pharyngeal teeth). Walleye are predatory fish with sharp, pointy teeth, and the squawfish has teeth in its throat. Some predatory fish, such as pike, have duckbill-like jaws that allow them to grasp their prey.

In contrast, fish with soft fleshy lips, such as suckers and carp, use their mouths to suck invertebrates, algae and organic debris off the bottom. Some of these bottom feeders, such as catfish, have the added benefit of having sensitive barbells on the sides of their mouth to help them sense food in murky water.

Most bony fish have small- to medium-sized, bony-lipped mouths on the end of their snout. Such mouths allow them to capture a variety of prey. These mouths are usually flexible and can be protruded rapidly to form a small, round opening while the mouth cavity is simultaneously expanded. The result is a sucking phenomenon similar to the action of an eyedropper. This sucking motion causes water



Sensitive barbells on the sides of their mouths help catfish find food.



Unlike other carp, grass carp eat underwater weeds and other vegetation.

to rush into the mouth of the fish at great speed, carrying with it plankton and other small organisms.

You are what you eat

Fish can also be grouped according to the type of food they eat. Minnows are usually herbivores, mainly grazing on algae and aquatic plants. Such fish have long, convoluted intestines to digest their diet of vegetative matter. Fish that feed on a variety of

plants, such as algae, and animals, such as insects, are classified as omnivores. Suckers and catfish fall into this category.

Fish that prey on other fish, as well as on other small vertebrates and large invertebrates (such as crayfish) are termed piscivorous. Some, such as large trout, can be voracious predators, even eating their own young. To avoid predators, schools of shiners and other small fish usually stay in the

shallower parts of lakes. Piscivores, which include bass, squawfish and walleye, are often favorites of anglers.

In the deeper waters of lakes, beds of aquatic plants provide food and cover for various fish. While this cover provides fish protection from predators, it also offers predators places to hide as they wait for prey to ambush. For example, pumpkinseed hang out among plants in deeper water, where they pick snails off the leaves and stems, and bluegill concentrate in shallower water where insect larvae cling to plants. Lurking at the edges of these aquatic plant beds are largemouth bass waiting to capture any of these smaller fish that accidentally stray too far from the protective concealment of the aquatic plants.

Fish aren't the only piscivores found in many waters. Among the smallest piscivores are the same aquatic insects that are important food for the fish themselves. Stonefly larvae, dobson fly larvae and the larvae of some beetles often eat newly hatched trout. Garter snakes; various birds, including kingfishers, mergansers and herons; and mammals,



While most trout eat insects, large trout have been known to eat other fish.

UTAH'S WILD NOTEBOOK

**Mayfly**

such as mink, otter and humans, are among the animals that include fish as a major part of their diet.

Incredible insects

Most fish feed on invertebrates, including aquatic insects and their larvae, snails, leaches, worms and crustaceans. Fish that feed on bottom (benthic) invertebrates are mainly small species that search among rocks and vegetation for prey. In Western streams small minnows, such as speckled dace and juveniles of larger species, such as squawfish, are the predominant benthic invertebrate feeders. Sculpins, another invertebrate feeder, are small, flattened fish that live among rocks in faster water and ambush passing larvae. Small predatory fish often consume the eggs of other fish as well.

Many aquatic invertebrates tend to be more active at night, when it's harder for fish to see them. During this time, by accident or on purpose, many release their hold on the bottom and drift downstream to settle elsewhere, causing what is termed "drift." In cold-water streams, trout take advantage of this drift and feed heavily at dawn and dusk. Drift also occurs in warmwater streams and provides food to shiners, various sunfishes and small bass. Terrestrial insects that fall into the water from surrounding vegetation, as well as those that leave the vegetation to breed and lay eggs, are also an important food source for fish in streams.

Long ago, people realized that many fish eat aquatic insects. Aware

of this relationship, people began to make lures resembling the insects fish prefer to eat. These "flies" placed onto hooks are the basis of what today is called "fly-fishing." Knowledge about the aquatic insects and larvae that fish prey upon is important for people who want to become better anglers.

Most aquatic insects live below the water's surface during their larval stage. The best place to find some of these aquatic insect larvae (also called nymphs) is on the underside of rocks in a stream.

Two people can also collect a sample by having one person stand in a small stream and kick his or her feet among a cluster of small fist-sized rocks. The second person needs to be downstream with the edge of a fine-mesh screen stretched between two poles (kick seine) pressed along the bottom surface of the stream. Collected larvae can be viewed by dropping them off the screen into a white-bottomed container full of stream water. In a pond, all you have to do to collect aquatic insects and larvae is scoop up some mud and water with a strainer. Besides being

important for fish, aquatic insects can be an important indicator of stream or lake health. Because they are so small, many insects are easily affected by even small amounts of pollution or disturbances in the environment. Stonefly, mayfly and caddisfly larvae are very sensitive to changes in stream conditions caused by pollution. Dragonfly and damselfly larvae prefer good stream quality, but can survive slightly lower water quality. Midge larvae and rat-tail maggots are among the most tolerant aquatic insects and have adapted to living in dirty or oxygen-depleted waters. The presence of many very tolerant insects, and fewer of the more sensitive insects, is an indication that conditions in the stream are probably not healthy for fish.

For more information about aquatic insects and their relationship to fish, see wildlife.utah.gov/projectwild. You'll also find a list of free educator resources, a reading list, related Web sites and a fun and engaging activity called "Hungry Trout Relay" that you can conduct with students. 🐟

**A bluegill's small mouth is suited for eating small organisms like insects.**

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